

MISSOURI CONSERVATIONIST

VOLUME 83, ISSUE 5, MAY 2022
SERVING NATURE & YOU





Nature is waiting

Connect with the outdoors this spring by making plans to plant native plants, read a book in a hammock, or hang a hummingbird feeder. It's easy to enjoy nature at a park by having a picnic, throwing a Frisbee with pals, or simply getting in some steps with your four-legged friend.

Find where to go with the free mobile app MO Outdoors at **mdc.mo.gov/mooutdoors**.

Discover nature and **Never Lose Touch**.



For ways to reconnect with nature, visit **mdc.mo.gov/neverlosetouch**.

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MISSOURI CONSERVATIONIST



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by JIM RATHERT

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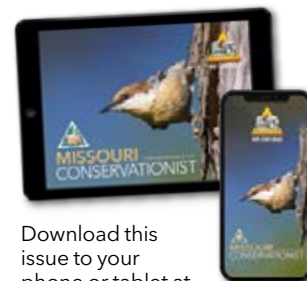
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Letters to the Editor

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CONSERVATIONIST
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YELPED

Thanks for the information on the six conservation areas [Conservation Areas Get Yelped, March, Page 22]. I've spent many days exploring the wild lands of our beautiful state, but these are all new destinations for me!

J. Biehle
via email

NEONICS

Slowing Insecticide Movement in Soil [Nature Lab, March Page 4] misses the easily solved problem of neonics getting into our waters in Missouri. Quit using neonics on crops grown on MDC land.

I have included two links regarding integrated pest management and organic methods: short.mdc.mo.gov/4J7 and short.mdc.mo.gov/4J8. These methods are embraced all over the world and they are successful. There are thousands of home gardeners doing this in Missouri and hundreds of farms using these methods.

Dayna McDaniel via email

MDC's goal with the row crop production, haying, and grazing on conservation areas isn't to maximize yields, but enhance habitat and food for wildlife on conservation areas. Therefore, in 2022 the department made several changes to our agricultural crop program. This growing season, all new agricultural crop contracts that were bid out will have a waiver giving the option to plant neonic treated seeds the first year of the contract. However, in future years, all plantings will require neonic free seed. The one year waiver was put in place since many farmers purchase seed in late summer or early fall. In addition, the department is in the process of initiating a cover crop program for cropland acres on conservation areas that will improve soil health.

Starting in 2022, MDC will begin requiring cover crops on all new ag crop contracts. The goal is to have 75 percent of row cropland acres in a cover crop program within five years. —THE EDITORS

TAPPING TREES

Our family loved the February issue. *Tapping Into New Traditions* [Page 23] about maple sugaring was a huge hit. Our son, Ezra, asked if we could tap our maple last summer. I told him we had to wait until late winter, but admittedly this was all I knew about maple sugaring.

When I saw your article, it reminded me of his request. We decided to try our hand at it with the guidance in your article. I didn't know it was so simple! Thanks for inspiring a new family tradition.

Jasmine B. Springfield

UP FRONT WITH BIRDS

Up Front in the March 2022 issue [Page 3] was beautifully done.

I am an avid bird feeder, so I'm definitely interested in the ornithologist's article [*For the Love of Birds*, Page 10]. Thanks for all MDC does.

John Foster via email

Sarah Kendrick sings! My love of birds runs deep. My two life-listing aunts traveled the world, but always enjoyed the local feathered friends around St. Louis. We learned early the use of field glasses, bird feeders, and hiking outdoors. Now, I'm passing this on to my grandkids — and Sarah's article helps.

John Ruck via email

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Send a note using our online contact form at mdc.mo.gov/commissioners.

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The Missouri Department of Conservation protects and manages the fish, forest, and wildlife of the state. We facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources.



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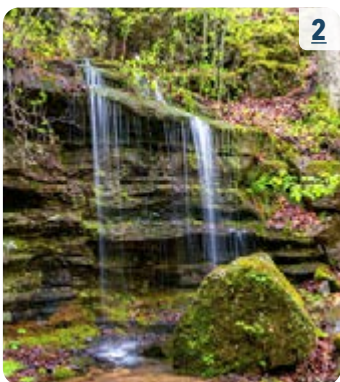


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common five-
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via email

2 | Hickory
Canyons Natural
Area by **Perry
Eck**, via Flickr

3 | Plains pucoon
and Ohio
spiderwort at
Sand Prairie CA
by **Kathy Bildner**,
via Flickr



2



3



Want another chance to see your photos in the magazine?

➔ In the December issue, we plan to feature even more great reader photos. Use the submission methods above to send us your best year-round pictures of native Missouri wildlife, flora, natural scenery, and friends and family engaged in outdoor activities. Please include where the photo was taken and what it depicts.

TAYLOR LYNN PHOTOGRAPHY



Up Front

with Sara Parker Pauley

✳ Among life's greatest gifts are best mates of the outdoor variety — the ones you choose to hunt, hike, and fish with, sit around a campfire and discuss life's meaning, or look up at the stars and be silent with. At the end of my life, among my list of greatest gratitudes will be my outdoor mates, both the human and the four-legged kind.

I had to say goodbye to one such mate this last month. Even when he couldn't lift his head at the end, he still forced a wag, a thump or two, just to convey he was still with us. That was our black Labrador Scout — best four-legged friend ever — always happiest being with people and most certainly ready for his next outdoor adventure, be it chasing squirrels, swimming in the creek, or just lying in the grass with all four legs pointed to the sun. It was the worst of days — saying farewell — and yet gratitude for his life far outweighs any sorrow.

A dear friend once told me the best way to pick good friends is to decide if they bring you joy and make you better. I thought of this the day we said goodbye to Scout and smiled through my tears. Every day of his life I can assure you, he brought joy and over time made me a better human. You were a good boy, Scout. Here's to our best outdoor mates — may we treasure them each and every day.

Sara Parker Pauley

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Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

COMMUNITY SCIENCE

Ticks and Tick-Borne Illness Study

✳ Sending live ticks through the mail may seem odd, but that's exactly what MDC and A.T. Still University's (ATSU) Deb Hudman, senior research associate in microbiology and immunology, have asked Missourians to do. "We're receiving ticks from our citizen scientists and using those samples to survey for diseases in each county," explains MDC Ecological Health Unit Science Supervisor Matt Combes.

Ticks are mailed to Hudman's lab, where they are identified, and a subset are tested for bacterial pathogens that can infect humans. Data is compiled by county and posted on the ATSU website. When the study is complete, results will be reported to the Centers for Disease Control and Prevention and the Missouri Department of Health and Human Services.

"When ticks bite, they release antihistamines and anticoagulants," says Hudman. "They do everything they can to not be detected and then they put in a cementing agent to hold themselves in place."

Once attached, ticks ingest blood until they are full. They then drop off the host to molt into the next



Lone star tick (female)



American dog tick (female)



Blacklegged tick (male & female)



Gulf coast tick (female)

MDC and A.T. Still University are conducting a statewide survey of ticks, focusing on the four human-biting species above. Getting bit by a tick does not mean you will get a disease, but it's a good precaution to check yourself, your family, and pets for ticks after spending time outdoors.

Researchers get help from Missourians for a statewide survey of ticks and tick-borne pathogens

stage of their life cycle or lay eggs if the tick is an adult female. They need three blood meals to complete their life cycle; each blood meal increases their chances of acquiring pathogens. Bacteria detected in Missouri ticks include those that cause ehrlichiosis, tularemia, and Rocky Mountain spotted fever.

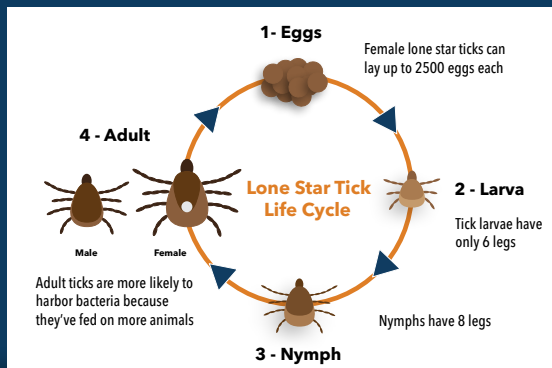
"Missourians have made this work possible," says Hudman. "I estimate that 3,700 people have submitted ticks so far. Without their participation, there's no way we could cover the entire state."

The tick survey runs from April 2021 through September 2022. View a map of current survey results by county and find how to participate at www.atsu.edu/ticks.

Ticks and Tick-Borne Illness Study at a Glance

12,821 ticks have been submitted to the project since April 2021 (8 different species)

- 71% Lone star tick
- 25% American dog tick
- 2% Blacklegged tick
- 1% Winter tick
- Remaining 1%: Gulf coast tick, rabbit tick, brown dog tick, and bat tick



After hatching, all ticks go through three life stages. Each stage requires a blood meal for the tick to molt into the next stage.

In Brief

News and updates from MDC



APPLY FOR ELK AND BEAR HUNTING

PERMIT
APPLICATIONS
OPEN MAY 1,
DRAWINGS
OCCUR JULY 1

➔ MDC will offer five permits to hunt bull elk in Missouri this fall, with at least one permit designated for qualifying area landowners and the remaining permits for the general public.

MDC will also offer 400 permits for the taking of a maximum of 40 black bears during the second Missouri black bear hunting season this fall. At least 10 percent of black bear permits will be allocated to qualifying area landowners.

Only Missouri residents who will be at least 11 years old by the first day of the hunt for which they are applying are eligible to apply for elk and bear permits during the application period, May 1-31. All permits will be assigned through a random drawing.

For more information on elk and elk hunting in Missouri, visit mdc.mo.gov/elkhunting.

Learn more about black bears and bear hunting in Missouri at mdc.mo.gov/bearhunting.

Apply for the bear permit and elk permit random drawings May 1-31 online at mdc.mo.gov/buypermits, through MDC's free MO Hunting app, through a permit vendor, or by calling 1-800-392-4115. Results of the permit random drawings will be available online by July 1.



DISCOVER WEIRD WILDLIFE FACTS WITH NEW PUBLICATION

The mammals, birds, reptiles, amphibians, and insects of Missouri are diverse, remarkable, and sometimes just plain strange. From the American beaver, whose teeth are chainsaw-sharp and never stop growing, to box turtles, who partially freeze over the winter and still survive, it's a weird, wild world out there. You can now learn more with MDC's new book, *Strange but True*.

Adapted from the pages of MDC's award-winning children's magazine *Xplor*, *Strange but True* is a 136-page, full-color book that offers more than 350 fun facts about Missouri wildlife at its strangest. Written by *Xplor* editor Matt Seek and illustrated by nature artist Mark Raithel, *Strange but True* is your guide to all the unusual, unique, and unbelievable stuff that goes on in nature.

Whether you're a kid or a kid at heart, the *Strange but True* guidebook will have you laughing, scratching your head, and learning new fun information about Missouri's native wildlife. The guidebook is now available for purchase for \$8.95 (plus shipping) online at mdcnatureshop.com or at MDC nature centers around the state. To find a nature center near you, visit short.mdc.mo.gov/4JV.



A tri-colored bat weighs as much as a quarter.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: I found these things growing on the leaves of a smaller tree next to our pond. What are they, and what species of tree is this?

➔ These galls are caused by elm sack gall aphids, a species native to Europe. Although the galls appear dramatic, they are not a concern for tree health.

The tree is likely a slippery elm. Slippery red elm leaves have a lot of stiff hairs on the upper surface and almost feel like Velcro when crushed between index finger and thumb.

Plant galls are abnormal growths on the external parts of plant tissues — akin to benign tumors or warts in animals. Galls are generally initiated on a plant by the egg-laying or feeding activities of various insect species, or in this case, aphids.

If you slice one of these reddish sacs open, you may see insects inside. The winged aphids that emerge from elm galls in the summer fly to various grasses where they colonize the roots. In the fall,

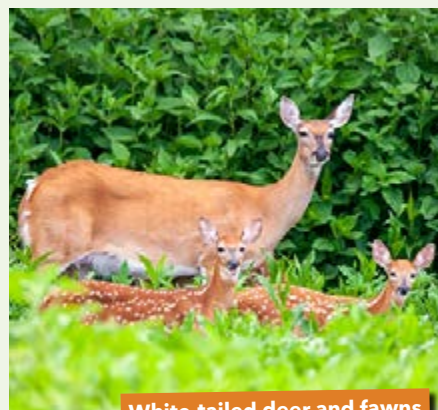


Elm galls

winged aphids emerge from grass to make a return migration to elm where they overwinter in bark crevices.

Q: We live on a 20-acre farm; about 16 acres is pasture. A local farmer takes care of the fields for us. Last year at least two, possibly three, fawns were killed because he couldn't see them in the tall grass. He managed to move one to the edge of the field just in time. Is there anything we can do to prevent such encounters?

➔ Keeping still is a fawn's first survival strategy. Until they are about two weeks old, fawns are unlikely to run when they hear danger coming. Peak fawning in Missouri occurs around June 1. However, if farmers can avoid haying, mowing, and other field work until August, they can improve not only the survival chances of fawns but of ground nesting birds, such as bobwhite quail and meadowlarks. Additionally, walking the edges of the field prior



White-tailed deer and fawns

to working in it — and searching near areas where the grass has been matted down — is another strategy for identifying birthing sites and avoiding them with machinery.

To minimize human scent being deposited on fawns when handling them, it's best to wear latex or nitrile gloves. Move them into thick vegetation as close as possible to where they were found. The mother should have no trouble relocating a fawn that's been moved less than 100 yards.

Q: On a morning walk, I spotted this amphibian. Can you tell me, what species is it?

➔ This is a central newt in the eft — terrestrial, but immature — stage of life. The eft stage occurs between the aquatic larvae and the aquatic adult.

Central newts have a complex life cycle. Breeding occurs in wetlands, such as ponds and swamps, in late March through early May. Courtship behavior from swimming activities to tail fanning occurs in the wetland between the male and female until



Central newt, eft stage

the female selects a mate. Over a period of weeks in May and June, a female can lay 200–375 eggs, singly, on aquatic plants. These hatch after three to five weeks. The larvae live in water until late July or early August, then transform into land-dwelling efts. After living two to three years on land, they return to a pond or swamp, mature into adults, and spend the rest of their lives mostly in water. To learn more, visit short.mdc.mo.gov/43p.

What IS it?

Can you guess this month's natural wonder?

The answer is on Page 9.



Nathan Ingle

PULASKI COUNTY
CONSERVATION AGENT

offers this month's

AGENT ADVICE

Fishing for black bass post-spawn can be exhilarating. Females gather in schools off the bank, aggressively feeding. Try targeting points coming out of coves, rocky outcrops, or bluffs. Male black bass stay behind to watch the nests. Locate nests around the bank line and throw anything that floats on the water. To protect his nest, the bass will strike the lure with aggression. Be mindful of the regulations where you're fishing. On most streams south of the Missouri River, black bass must be released March 1 through the Friday before Memorial Day weekend. This allows black bass time to spawn in the colder water. For more information, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Z8T and *A Summary of Missouri Fishing Regulations* at short.mdc.mo.gov/Z9n.

SPECIES OF *Conservation Concern*

RARE MISSOURI PLANT

Oklahoma Grass Pink Orchid

Oklahoma grass pink orchids (*Calopogon oklahomensis*) are primarily distributed from southwest Missouri to the coastal regions of Texas and southern California. They prefer drier habitats, such as prairies, pine savannas, flatwoods, and meadows, avoiding wetter sites preferred by other *Calopogon* species. Their widely spaced pink-to-white fragrant flowers appear to be upside down, with the lip at the top of the flower.

The orchid uses deception to attract pollinators. A tuft of orange-yellow hairs on the pedallike lip resembles pollen, which attract bees. Bees of sufficient weight find themselves forced backwards into the column by a hinged structure called a labellum. Pollen that was already attached to the bee is left behind and as the bee exits the flower, it picks up a fresh load of sticky pollen found on the end of the column.

WHY IT'S IMPERILED

Due to the loss of prairie habitat to agriculture and urbanization, Oklahoma grass pink orchids are considered vulnerable and appear to have been extirpated from much of their historic range.

MDC RESTORATION EFFORTS

Ongoing efforts to restore populations of this rare species include protection and management of high-quality prairie remnants and working with partners that also manage and own prairie remnants on both public and private land.

WHAT CAN YOU DO?

If you are visiting a native prairie and see Oklahoma grass pink orchids, contact MDC State Botanist Malissa Briggler (Malissa.Briggler@mdc.mo.gov). Your help can provide valuable information needed to conserve and determine the status of this rare species in our state.



SHARING THE HARVEST

MDC thanks the thousands of Missouri deer hunters who donated 242,774 pounds of venison to the state's Share the Harvest program this past deer season, including 5,053 whole deer. MDC also thanks the participating meat processors throughout the state who grind the donated deer meat into ready-to-use packages and the many sponsors who financially support the program.

The donated deer meat goes to local food banks and food pantries to help feed hungry Missourians all around the state. To get Share the Harvest venison, contact local food banks or food pantries.

Share the Harvest, which was started in 1992, is coordinated by MDC and the Conservation Federation of Missouri (CFM). Including this past season's donations, the program has provided nearly 5 million pounds of lean, healthy venison to hungry Missourians.

For more information on Share the Harvest, visit CFM online at confedmo.org/share-the-harvest.

UPCOMING MIGRATORY GAME BIRD AND WATERFOWL SEASONS

The Missouri Conservation Commission approved recommendations at its March 25 meeting for the upcoming 2022 migratory game bird hunting seasons and 2022-2023 waterfowl-hunting seasons.



✦ 2022 Migratory Game Bird Hunting

Mourning Doves, Eurasian Collared Doves, and White-Winged Doves

Season: Sept. 1–Nov. 29

Limits: 15 daily and 45 in possession combined total for all three species

Hours: One-half hour before sunrise to sunset

Sora and Virginia Rails

Season: Sept. 1–Nov. 9

Limits: 25 daily and 75 in possession combined for both species

Hours: One-half hour before sunrise to sunset

Wilson's (Common) Snipe

Season: Sept. 1–Dec. 16

Limits: 8 daily and 24 in possession

Hours: One-half hour before sunrise to sunset

American Woodcock

Season: Oct. 15–Nov. 28

Limits: 3 daily and 9 in possession

Hours: One-half hour before sunrise to sunset

continued on Page 10 »

WHAT IS IT?

GRAY TREEFROG

Below each of a gray treefrog's large black eyes are large white spots. Gray treefrogs have warty skin, which varies in color from green to light greenish gray, gray, brown, or dark brown. They also have prominent adhesive pads on their fingers and toes. The call of the gray treefrog (*H. versicolor*) is a musical birdlike trill.



MIGRATORY GAME BIRD AND WATERFOWL SEASONS

(continued from Page 9)

✱ 2022–2023 Waterfowl Hunting

Teal

Season: Sept. 10–25

Limits: 6 daily and 18 in possession

Hours: Sunrise to sunset

Ducks

Season:

- North Zone: Oct. 29–Dec. 27
- Middle Zone: Nov. 5–13 and Nov. 19–Jan. 8, 2023
- South Zone: Nov. 24–27 and Dec. 7–Jan. 31, 2023

Bag Limit: 6 ducks daily with species restrictions of:

- 4 mallards (no more than 2 females)
- 3 wood ducks
- 2 black ducks
- 2 canvasbacks
- 2 hooded mergansers
- 2 redheads
- 2 scaup for first 45 days and 1 scaup for last 15 days
- 1 mottled duck
- 1 pintail

Possession Limit: Three times the daily bag or 18 total, varies by species

Hours: One-half hour before sunrise to sunset

Coots

Season: Same as duck season dates in the respective zones

Limits: 15 daily and 45 in possession

Hours: One-half hour before sunrise to sunset

Snow Geese (White and Blue Phases) and Ross's Geese

Season: Nov. 11–Feb. 6, 2023

Limits: 20 blue, snow, or Ross's geese daily with no possession limit

Hours: One-half hour before sunrise to sunset

White-Fronted Geese

Season: Nov. 11–Feb. 6, 2023

Limits: 2 daily and 6 in possession

Hours: One-half hour before sunrise to sunset

For more information on migratory bird and waterfowl hunting, visit MDC online at short.mdc.mo.gov/4J9, or get MDC's *Migratory Bird and Waterfowl Hunting Digest 2022–2023*, available beginning in July where hunting permits are sold.

Canada Geese and Brant

Season: Oct. 1–9 and Nov. 11–Feb. 6, 2023

Limits: 3 Canada geese and brant in aggregate daily, 9 in possession

Hours: One-half hour before sunrise to sunset

Light Goose Conservation Order

Season: Feb. 7, 2023–April 30, 2023

Limits: No daily or possession limits

Hours: One-half hour before sunrise to one-half hour after sunset

Methods: For the taking of blue, snow, and Ross's geese during the Conservation Order, hunters may use shotguns capable of holding more than three shells and recorded or electronically amplified bird calls or sounds or imitations of bird calls or sounds.

✱ Youth Hunting Days

North Zone: Oct. 22–23

Middle Zone: Oct. 22–23

South Zone: Nov. 19–20

Limits: Same as during regular waterfowl season

Hours: Same as during regular waterfowl season

Requirements: Any person 15 or younger may participate in youth waterfowl hunting days without permit provided they are in the immediate presence of an adult 18 or older. If the youth hunter is not certified in hunter education, the adult must have the required permits and have in his or her possession proof of hunter education unless exempt. The adult may not hunt ducks but may participate in other seasons that are open on youth hunting days.



✱ Falconry Seasons

Falconry Season for Doves

Season: Sept. 1–Dec. 16

Limits: 3 daily and 9 in possession, singly, or in the aggregate (any ducks, coots, or mergansers taken by falconers must be included in these limits)

Hours: One-half hour before sunrise to sunset

Falconry Season for Ducks, Coots, and Mergansers

Season: Open during waterfowl seasons (teal, youth, and duck) and Feb. 10, 2023–March 10, 2023

Limits: 3 daily and 9 in possession, singly or in the aggregate, during the regular duck hunting seasons (including teal and youth seasons) and extended falconry seasons (any doves taken by falconers must be included in these limits)

Hours: Sunrise to sunset during the September teal season, one-half hour before sunrise to sunset during the remaining seasons



From Binge-Watching to **Birdwatching**

WITH SPRING MIGRATION AT ITS PEAK, THERE'S NO
BETTER TIME TO JOIN AMERICA'S GROWING FLOCK
OF BIRDERS

by Matt Seek | photographs by Noppadol Paothong

Somewhere in the midst of the pandemic — between feeding sourdough starters, picking out sweatpants, and attending Zoom meetings — many Americans went from binge-watching to birdwatching.

According to the Cornell Lab of Ornithology, Merlin (the lab's bird identification app) and eBird (the lab's internet platform where birders share species they've spotted) both saw unprecedented downloads and usage during the pandemic. Last February, a record-breaking 300,000 people submitted sightings to eBird during the Great Backyard Bird Count. Last May's Global Big Day saw eBird users record 2.1 million observations — the most sightings ever in a single day. Traffic to the National Audubon Society's website spiked over 20 percent during the height of spring migration last year. And membership in the St. Louis Audubon Society more than doubled from 2020 to 2021.

The demographics of birding are also changing. A decade ago, according to surveys by the U.S. Fish and Wildlife Service, the field marks of a "typical" birder were: female, 55 to 64 years old, middle-income, white. Today, more Millennials and people of color are becoming birders.

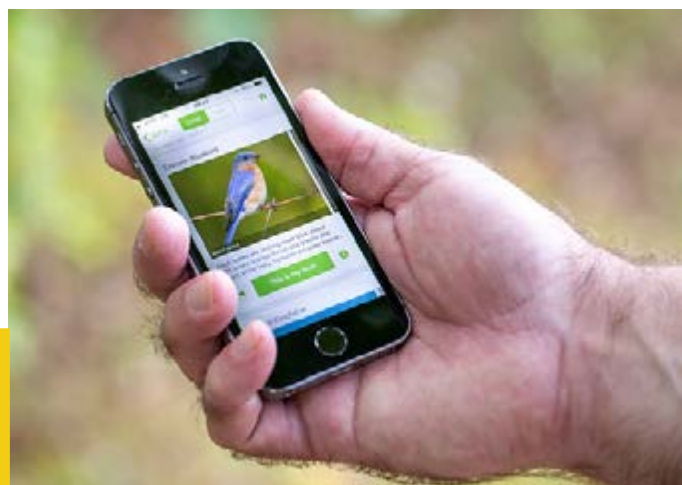
There's no doubt birding's popularity is soaring. But if you're still on the fence about joining the flock, here are ten reasons why you should give it a try.

It's an Inexpensive Hobby

You start out watching birds flocked at your winter feeder. Because it's free, you download Merlin, a bird identification app from the Cornell Lab of Ornithology.

One day at your local bookstore, on a whim, you drop twenty bucks on *The Sibley Field Guide to Birds*. Soon you can tell the difference between a white-crowned sparrow and a white-throated sparrow. For some reason, this feels like a superpower.

Eventually, you grow frustrated with the paltry power of your God-given eyesight, so you order a pair of binoculars. They aren't Swarovski's, but \$200 is a lot of money. Your guilt evaporates on the night before turkey season, when you take stock of the growing pile of gear by the back door — your Remington 870, a box of No. 4s, a Jake decoy, slate call, camouflage jacket ...



You Can Bird Anywhere, Anytime

Every spring, the rainforests exhale, and a great breath of birds blows into your neighborhood. The sky dance of woodcocks, the arrival of pine warblers, the skittering of hungry shorebirds across a mudflat — these help you track the passing weeks nearly as accurately as a calendar.

To justify the binocular expenditure, you start taking them everywhere. This amuses your wife and embarrasses your children.

When turkey gobblers grow quiet, you crane your neck to spot warblers in the treetops. When bass quit biting, you watch sedge wrens and swamp sparrows creep between cattails. Birding, you realize, has no closed seasons.

Even in the city there are birds. On a trip to St. Louis, you spot a Eurasian tree sparrow in Forest Park. Your field guide shows the range of this Old World immigrant as a tiny, comma-shaped blob centered over St. Louis County. Nowhere else on the continent can you find this bird!

Binoculars take up little space in your carry-on luggage, so they begin accompanying you farther afield. You puzzle over terns and gulls on a Florida beach. You learn that the mountains of Colorado have a different suite of jays than the Midwest and that Texas abounds with hummingbirds.

It Sharpens Your Senses

Before you know it, you begin to see birds where others do not. (The trick is to look for movement, not the birds themselves.)

You delight in details — all but invisible to casual observers — the little black spots on a downy woodpecker's tail, the rarely seen "crown" of an eastern kingbird, the sky-colored epaulets of a blue-winged teal as it whistles past at 30 miles per hour.

On a springtime stroll through your neighborhood, what once was white noise now sounds like a symphony. You hear *tea kettle, tea kettle, tea kettle*, and know somewhere in the brush an amorous Carolina wren is calling to his mate.

Although it's possible to birdwatch without gear, a pair of binoculars and a field guide will greatly improve your enjoyment. The Merlin app is a great beginner's guide — and it's free.



Spending time
in nature is
good for you



American goldfinch

Much of birding's allure stems from the fact that rare birds can turn up anywhere. You never know what you'll find each time you hoist your binoculars.

You Never Know What Might Turn Up

You subscribe to the Missouri Birding Society's email forum and eBird's rare bird alert. You read about an ivory gull — an Arctic species common among icebergs and polar bears — that was spotted at a marina on the Mississippi River. Anglers find a brown booby — an ocean-dweller common in the Caribbean — loafing near a boat ramp on the Current River. And a vermilion flycatcher — an ember-colored bird of the Desert Southwest — turns up in the Bootheel.

Now, whenever you slip your binoculars over your neck, there is a tingle of anticipation. Among the robins and cardinals and starlings, there's a chance — however unlikely — you could find something extraordinary, a wandering bird who flew off the edge of her map.

You'll Meet Interesting People

Like my friend Brad, who could simultaneously steer his SUV around a curvy Ozark blacktop, eat a sandwich, and ID raptors soaring overhead; who knew where to find a greasy spoon within 15 minutes of every Important Birding Area across the state; who on New Year's Day 2018 — in subzero weather, while most of us were still sleeping off the excesses of the night before — had already recorded two rare birds for the year; who bought cheap binoculars so he could give them away to novice birders; who chose vehicles based on whether or not the rear windows rolled all the way down so passengers had unencumbered views of roadside birds; and who, when his hearing began to fail, bought a set of "bionic ears" so he could continue to listen to bird songs.

It's Good For You

Just as your birdwatching hobby is picking up steam, a pandemic upends the entire world. Your traveling shrinks, and your waistline expands. Your mood turns sour.

But interspersed among the near-daily COVID case reports, you notice a recurring story: Spending time in nature is good for you. Almost every week, a new study emerges offering evidence that time spent outside helps lower blood pressure, reduce anxiety, improve lung function, bolster happiness. Canadian doctors even begin writing "prescriptions" to visit natural areas.

You climb off the couch and grab your binoculars. Within months, you've re-explored every inch of the fields and forests around your town. You start to feel better.

You Can Make It A Game

Like many birders, you begin keeping a life list. At first, you simply jot down what you've seen in the Notes app on your phone. Before long, you begin filing observations to eBird.

You learn about Big Years and Big Days, in which birders zigzag across the world, a continent, or a particular region to tally as many feathered creatures as possible in 365 days or 24 hours. (The U.S. Big Year record is 725 species. Missouri's best Big Year clocked in at 324 species, and our Big Day tally is 208 species.) While you aren't hardcore enough to threaten any of those records, each May you try to break your personal Big Day, and each January you set out to improve on the previous year's tally.



Indigo bunting



Prothonotary warbler

Birding Resources

mobirds.org

Join the Missouri Birding Society's email forum, download the annotated checklist of Missouri's birds, find nearby birding "hotspots," and more at this useful website.

audubon.org

The National Audubon Society's website offers a treasure trove of birding-related information, including a buyer's guide to binoculars. You can also locate a local Audubon chapter to join.

eBird.org

Want to know what's been seen at your local birding spot? This is the place to find out. You can also create an account and contribute sightings, which benefits both biologists and fellow birders.

allaboutbirds.org

From the Cornell Lab of Ornithology, this is one of the best sites on the internet to learn about birds and birding.

merlin.allaboutbirds.org

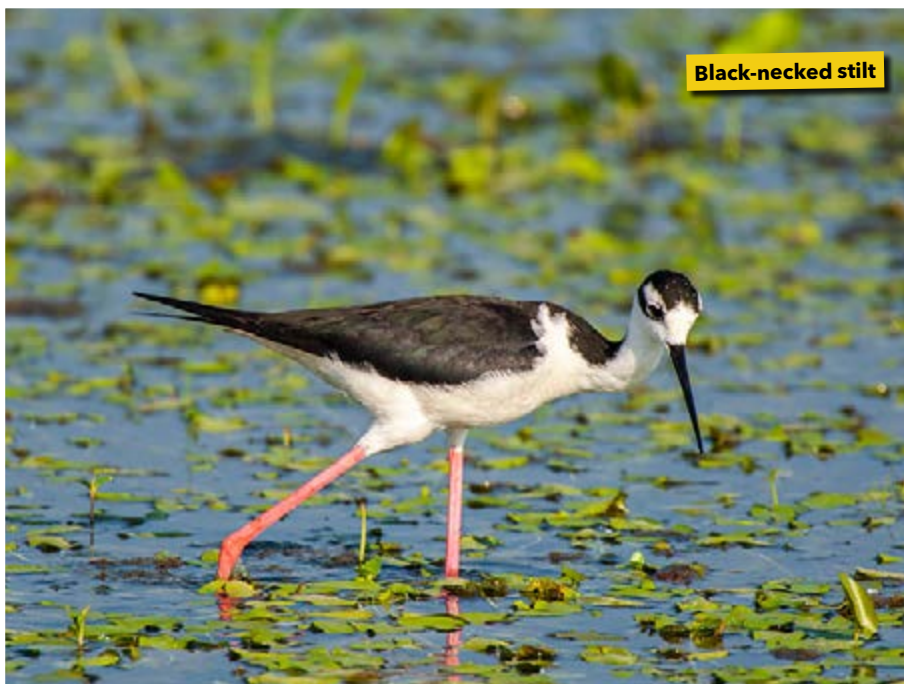
Access this website using your smartphone for a direct link to the free — and excellent — Merlin bird identification app.

mdc.mo.gov/wildlife/birds-7

The Conservation Department's online hub for all things bird-related.



Eastern kingbird



Black-necked stilt

There's Always Something to Learn

You learn, for instance, that at any given moment 200 to 400 billion birds live on Earth — about 40 for every human being; that tiny mites sprint up a hummingbird's beak to hitch a ride to the next flower; that many birds can see in the ultraviolet spectrum, and that vole urine reflects UV light, which helps kestrels find the little rodents; or that blackpoll warblers, a creature that weighs less than five pennies, can fly nonstop for three days over the open ocean and cover a distance of 1,800 miles.

It Gives You a Reason to Give a Darn

With knowledge comes admiration. And with admiration comes a sense of responsibility.

In the past five decades, nearly a third of North America's birds — 2.9 billion individuals — have disappeared. Knowing this both saddens and energizes you.

You swear off pesticides, plant native wildflowers in your backyard, and keep your cat inside. You become active in your local Audubon chapter and join the Conservation Federation of Missouri. You buy Duck Stamps to support habitat conservation.

And you fire off feisty, impeccably argued emails to your city council and congressional delegation insisting that they wage war against bush honeysuckle, stop the encroachment of subdivisions into wild areas, ban single-use plastics, protect the few remaining marshes and prairies and mangroves and rainforests, and do something — anything — to curb climate change.

Finally, It Can Save Your Life

One day you will be sitting in your makeshift home office, struggling to write a story. You're worried about the medical tests the pediatrician ordered for your daughter. Your decades-old refrigerator is making death rattles. World events and politics and — well, everything — are turning your hair prematurely gray.

Instead of building sentences, your mind wanders to something you read in last night's paper about the pandemic and how languishing could be defined as "a sense of stagnation and emptiness ... as if you're muddling through your days."

And you sigh.

Then something catches your eye outside the window. Flitting about the branches of your neighbor's maple is a bird. With black-and-white wings, a sunshine-colored belly, and a fiery orange throat, it's not just any bird, it is the most beautiful bird you've ever seen. It bounces from branch to branch — like a caffeine molecule with feathers — snapping up tiny, invisible insects.

You run downstairs to grab your binoculars.

On the way out the door, you yell to your wife, "A Blackburnian warbler!" And she hurries out to join you, not because she has the faintest idea what a Blackburnian warbler is, but because you're excited about something, and she loves you, and it reassures her that things are, eventually, going to be OK. ▲

Matt Seek is the editor of Xplor magazine and an avid birder.

Blackburnian warbler

**With knowledge
comes admiration**





Kayak Fishing

CLOSER TO THE WATER, CONNECTED TO NATURE

by Emily Porter and Justin McGuire | photographs by Noppadol Paothong



The tranquility of piloting a kayak, slicing quietly through a pristine landscape, is something better experienced than described. There is an intimate connection to nature when sitting close to the water, feeling its resistance against your paddle, and having your vessel react to your every movement. It invites a powerful sense of independence and accomplishment, harkening back to generations of those who paddled out of necessity instead of leisure. And if you are like a fast-growing number of kayak enthusiasts, a desire to wet a line and set a hook is inevitable.

A Growing Sport

According to the Recreational Boating and Fishing Foundation, the national percentage of fishing outings from a kayak nearly tripled between 2010 and 2020, from 2.3 percent to 6 percent. Consider that there were an estimated 969 million fishing outings in the United States during 2020, that equates to over 58 million kayak fishing outings. Up from just over 21 million kayak fishing outings in 2010, there was an increase of 37 million annual kayak fishing outings in a single decade.

While it would be impossible to know every driver behind the surge in kayak anglers, there are two clear influences that have had a measurable affect: the practical cost of kayaks and the pandemic.



Reduced Cost

Most kayaks have never been as expensive as more traditional fishing boats, such as fiberglass bass boats and aluminum johnboats. Recently, many more manufacturers have jumped into the kayak industry, creating competition. The result is increased availability and decreased prices. Consumers have options ranging from about \$200 to several thousand dollars. When figuring in the robust pre-owned market, there is a fishing kayak for you, regardless of your budget.

The Pandemic

Starting in the spring of 2020, people around the world flocked to nature. The outdoors provided a safe environment to social distance and recreationalists discovered (or rediscovered) nature's healing powers. The instinctual desire to find nature, and the renewal it offers, swept the world as calendars were quickly cleared. No time was wasted to fill the vacancy with adventure. According to the Outdoor Industry Association, 2020 saw an increase of over 7 million more Americans join in outdoor recreation than in 2019. It's no surprise that lake and stream accesses have seen a few more vehicles in their parking lots.

So, You're Interested?

Who could blame you? Kayak fishing opens up a world of access to ecosystems from a unique vantage point. Ozark rivers and streams, huge reservoirs, smaller lakes, and even farm ponds take on a whole new personality when experienced from the seat of a kayak. Do you only have an hour to hit the water? No problem. Do you want to turn your trip into a multi-day backcountry adventure? You can do that, too. Whether you want to catch-and-release beautiful, bronze smallmouth bass or keep a mess of bluegill for the frying pan, kayak fishing can be adapted to whatever style of fishing interests you.



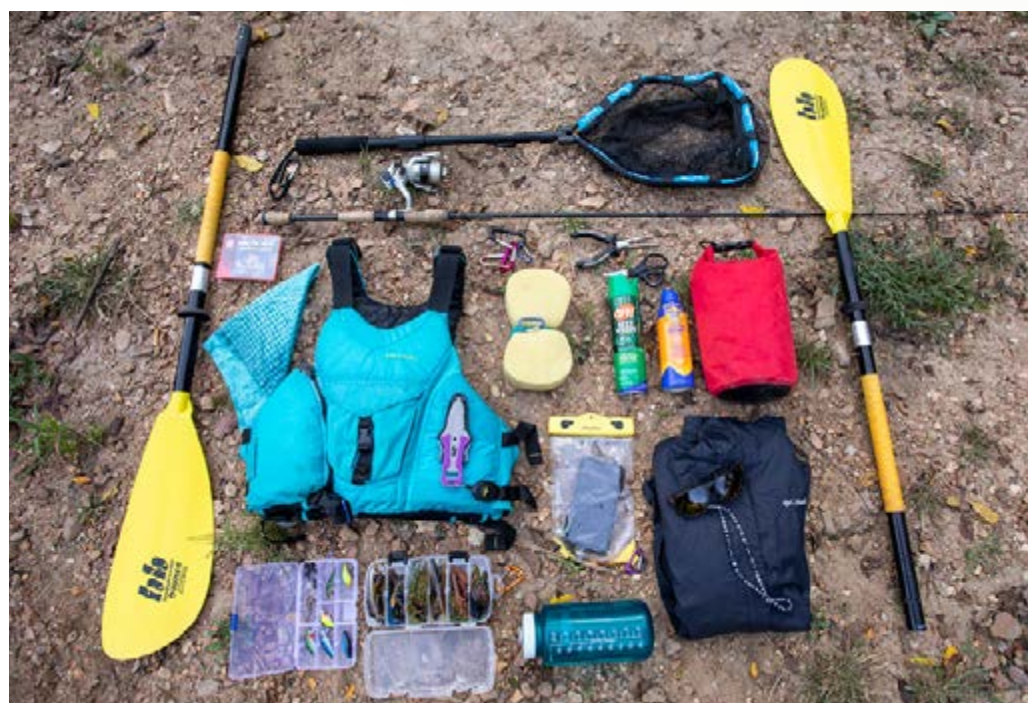
Before embarking on your own kayak fishing journey, know that it's not exactly a beginner activity. You should at least have a little familiarity and experience with both kayaking and fishing before attempting to marry the two. That's not to say the learning curve is steep — it's not at all. Simply spend some time leisurely paddling a kayak. You will pick it up quickly. The type and size of your kayak matters less than your ability to maneuver it. Especially in moving water like streams and rivers, being able to fight a fish while controlling your kayak becomes important. Get comfortable with your kayak before you try fishing out of it. If you would like formal training, keep an eye out for MDC's basic kayak training, posted at mdc.mo.gov/events.

If you are new to fishing, you can use the same website to search for MDC's Discover Nature — Fishing (DNF) courses. DNF is a four-part instructional series on the basics of fishing. Refrain from rushing out to buy new fishing equipment. If you own equipment, you can use it. If you don't have any and you're on a tight budget, check out MDC's Rod-and-Reel Loaner program. You can borrow equipment from one of nearly 200 locations statewide at no cost.

Safety First

As with any other outdoor activity, safety is the top priority. Be prepared for the worst-case scenario. When you're kayaking, that starts with a personal flotation device (PFD). Whether you buy one or borrow one, make sure it fits you properly and wear it any time you are on the water. It will not do you any good in your car or using it as a seat cushion.

Before taking off on your first angling voyage, find a friend, pick a warm summer day to visit your nearest pond, lake, or river, and dump your kayak. Yep, you read that correctly. Purposely flip your kayak. Leave your gear at home and put on your PFD. You need to know how to get back in your kayak should you receive some "instant feedback" from an errant paddle stroke or a submerged obstacle.



Pack Accordingly

Use dry bags to hold anything you don't want to get wet. Dry bags are designed to keep water out and resist tearing. Keep a little air in the bags and they should float, depending on the weight of the contents. These can be purchased from any outdoor retailer. Your run-of-the-mill trash bag won't cut it. Some things to keep in a dry bag are a change of clothes, a towel, your wallet, keys, phone, snacks, etc. If it's not in a dry bag, it's going to get wet.

Think about the sun and pack accordingly. Sunscreen, sunglasses, and a hat are a must. Stay hydrated by packing a small cooler with water for your trip. There's a difference between standing in the shade on the shoreline and being out on the water with no shade. Plan to bring enough supplies to

keep you safe for the length of time you intend to be out, and then add some in case of emergency. Closed-toed shoes of some sort are a must. In addition to keeping some of the rocks out of your shoes and protecting your toes from unseen underwater hazards, they'll protect the tops of your feet from painful sunburn.

Tie down anything you don't want to lose. This includes lanyards for your fishing rods and paddle, bungee cords for your cooler, tackle boxes, dry bags, and any other various items that might need secured. The sunglasses fitting snug on your face are not off limits to the whims of being lost either; a sunglass strap is cheap insurance. Bring a knife (for extra safety, a blunt-tipped knife works well around the water)

to quickly cut loose anything that tangles. It is good practice to keep a rope tied to the front of your kayak that is at least the length of the vessel. When water levels are low, you'll find yourself walking instead of paddling through portions of the river. While on lakes and bodies of flatwater, it becomes convenient to tie up to a tree or shore while taking a break to re-tie a lure or apply sunscreen. Ensure when any rope is not in use that you keep it contained and attached somewhere. Loose rope can quickly become a hazard.

Left page: Common targets of stream anglers include smallmouth bass (top) and goggle eye (bottom).

Right page: Pictured are common items to pack while planning your next kayak fishing adventure. Also be sure to secure items to your kayak while on the water.



Left: Learning to effectively navigate your kayak is a fundamentally important skill of successful kayak fishing.

Below: Sight fishing while standing can be a rewarding tactic.



Where To Go

We are fortunate to live in a state with many options for kayak fishing. A great resource for finding a boat ramp near you is MDC's MO Fishing app. In addition to being a handy way to buy and store your fishing permits, MO Fishing allows access to a database of public water bodies near you, filtered by distance from your location. Just click on the area to see the regulations that apply to that body of water. Take special note of creel limits, length limits, boating limitations, and other area-specific regulations that apply.

Another fabulous resource is the *Paddler's Guide to Missouri*. Find nearly all major navigable rivers in this comprehensive book. River accesses, river miles, and other section specific details give paddlers a quality place to start when planning their trip. You can purchase this publication from the Nature Shop website at mdcnatureshop.com or at a nature center near you.

Many smaller lakes across our state restrict boat access to electric motor or non-motorized, paddle-powered only use. Fishing from a kayak gives an angler the most access and accessibility on the water.

Once You're There

If you're visiting a pond or a lake ("flat water"), you will most likely be launching and taking out at the same location. But if you are kayaking a stream or a river ("moving water"), chances are you may be launching at one location and taking out at another. Make sure to arrange for transportation to and from your access points. It is also good practice to research other

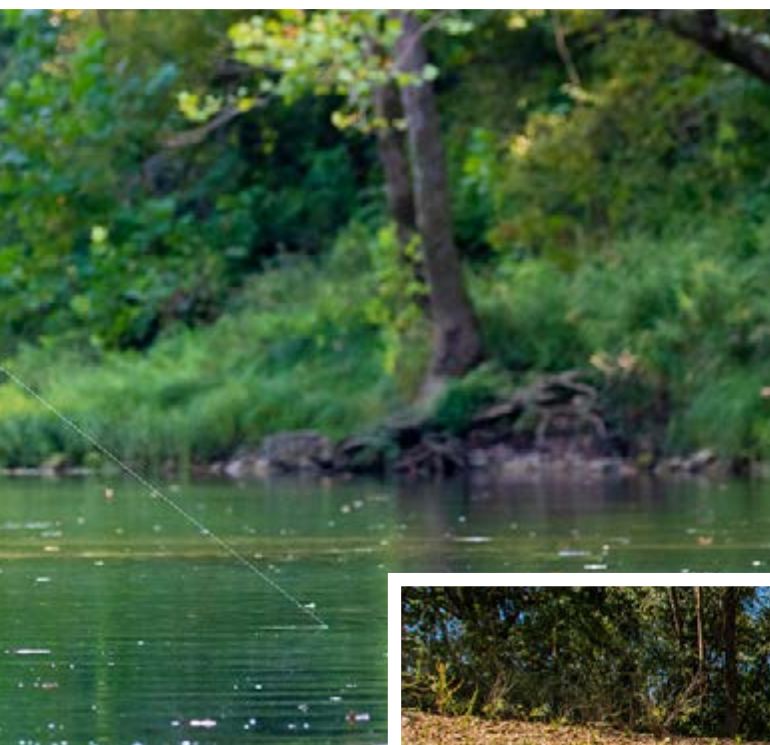
access points between your anticipated launch and take-out spots so that you can quickly get off the water in case of inclement weather or an emergency.

Keep in mind while launching, trucks with boats on trailers have the right-of-way on land. When you are preparing to launch, avoid taking up space on the boat ramp. Move your kayak to the side and allow other traffic to use the ramp. On the water, non-motorized watercraft have the right-of-way, but must always keep a watchful eye to avoid accidents.

How To Fish from a Kayak

The methods and techniques for fishing from a kayak are no different than from a boat. Fishing toward the bank instead of from the bank gives the angler some great advantages to mimic prey. The difference in kayak fishing comes from accessibility and maneuvering the vessel. A kayak responds to every shift in the angler's weight, every breeze, contact with every obstacle, and even the tug of a fish on the line.

Learning to effectively navigate your kayak is a fundamentally important skill of successful kayak fishing. Whether standing or sitting, using your paddle to adjust and angle your boat will affect each cast, and ultimately your ability to fish a specific spot on the water. Take time to master effective paddling skills. Learn to paddle forward and backwards; how to paddle standing or sitting with a fishing pole in your hand. Challenge yourself to utilize a draw stroke, (moving your kayak left to right while maintaining a forward focus). You don't have to stand up to fish, but if you are comfortable and are equipped with a good pair of polarized sunglasses, sight fishing while standing can be a rewarding tactic.



Don't forget to capture the moments and post your pictures with #MDCDiscoverNature and #MDCBragBoard.

Additionally, the flexibility that fishing from a kayak brings is part of the enticement to choose a paddle over a motor. With that comes the ease to get in and out of a boat to fish a riffle, hole, or laydown repeatedly.

Most fishing kayaks have rod holders either in front of or behind the angler that position the fishing rods straight up. Overhead limbs, often called sweepers, can break or dislodge fishing rods and can even cause the rods to act as levers to overturn an unsuspecting angler. Any unsecured equipment can quickly make a peaceful river resemble a floating scene of your neighbor's yard sale.

Current adds some especially challenging factors. A kayak angler must learn to read the water. Structures often provide ample fish habitat, but it is hard to fish that habitat if you are paddling to maintain control or avoid other obstacles. Even while on flat water, conditions can change daily, sometimes hourly. The last thing you want to do after a long day of fishing is paddle into the wind on the way back to your vehicle. Prior planning and a check of the weather can make your experience even more enjoyable.

Sitting but inches above the water, the angler is both literally and metaphorically closer to nature. In a world cluttered with speed, noise, stress, and distractions, kayak fishing is a perfect escape. For those seeking the social lifestyle, there are plenty of local clubs to contact.

A kayak angler is sharply aware of the wind, water, weather, and the eventual thump at the end of their line. Their reward is so much more than fish. It is immersive and interactive, but that beautiful, bronze smallmouth is awfully nice, too! Discover some fish slime on your hands to find happiness this year with kayak fishing. ▲

Emily Porter (pictured below) is MDC's recreational use specialist for Kansas City and Northwest regions. She is also a paddlesports instructor and avid outdoor adventurer. Justin McGuire is MDC's hunter education and shooting range coordinator. He is a passionate outdoorsman and kayak angler.



Assessing the WETLANDS



Black-necked stilt

PROCESS HELPS PLANNERS IN MEETING THE NEEDS OF WETLAND SPECIES

by Doreen Mengel

All living creatures have similar basic needs, including food, water, and shelter. A fourth need that we might not think about is space — all creatures have their personal bubble and, if crowded too closely together, can react poorly to tight quarters.

Each of these four needs in the right arrangement combines to serve as habitat, which is the place where animals live. Some animals live in forests, others in grassland, and still others in wetlands. As a natural resource agency, MDC's job is to ensure Missouri's wildlife has what it needs, when it needs it, and in the amount it needs. Equally important is providing Missourians access and opportunity to enjoy these critters and their habitats in such a way that no harm comes to either population.

In Missouri, 237 birds, 46 amphibians, 33 reptiles, 38 fish, and 34 mammals depend on wetlands, and many other species, like deer, make periodic use of wetlands. So how do we ensure that sufficient wetland habitat for all these species is available when Missouri has lost about 87 percent of wetlands that once existed in the state? And, equally important, how do we ensure our actions are strategic so that our approach is focused and efficient rather than hit-or-miss?



The dynamic interaction of soils, water, and plants within wetlands provide for a range of species.

PHOTOGRAPH BY DAVID STONNER

Focusing on Wetland Conservation

This is the second article of three highlighting a series of assessments that are the first steps in implementing MDC's Wetland Planning Initiative. The initiative is guided by a strategic guidance document, which articulates our philosophy on how we plan to approach wetland conservation in the next 25 years, and an implementation plan, which serves as an invitation to partners and stakeholders to engage with us in wetland conservation.

Before pursuing these goals, we must first understand what changes have occurred, our status, and future opportunities. We have conducted three assessments to provide this understanding: a bottomland functional assessment, a life history assessment of wetland-dependent animals, and a social assessment. This article highlights some of this important work encompassed in the life history assessment of wetland-dependent animals. The first article, *Meaningful Connections*, was published in the February 2022 issue of *Missouri Conservationist*.

Nearly 400 Missouri wildlife species depend on wetlands.

237
Birds



Wood duck

46

Amphibians



Gray treefrog

33

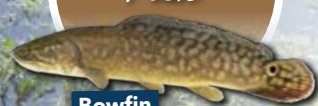
Reptiles



Northern watersnake

38

Fish



Bowfin

34

Mammals



Muskrat



Mudflat



Smartweed



Cattail



Forest

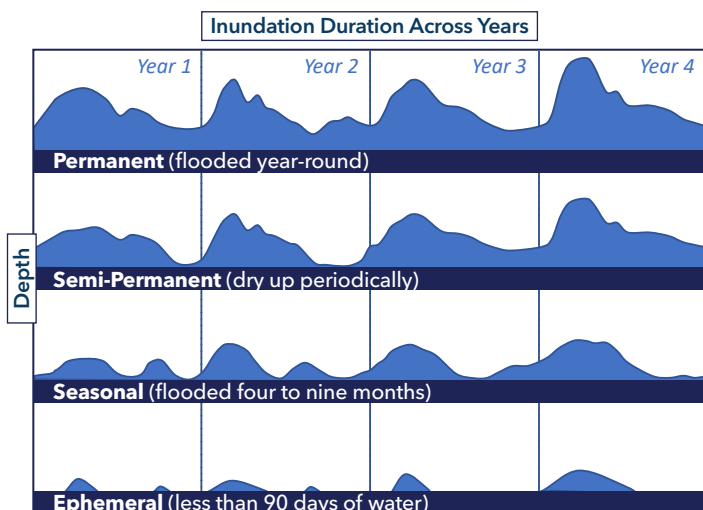
Taking Inventory

An assessment, or inventory, is a good first step, as it enables us to take stock of what wetlands we once had in Missouri, determine what we have now, and figure out what is realistic to accomplish for the future. To determine the kinds and amount of wetlands we once had in Missouri, we assessed wetlands on all bottomland ecosystems in Missouri (see the article, *Meaningful Connections*, in the February 2022 *Missouri Conservationist*).

Next, we need to know how well these habitats provide for the needs of animals that depend on wetlands. And to do this, we first identified the key ecological processes and landscape settings that drive wetland conditions. The dynamic nature of wetlands is what makes them so productive. Conditions change seasonally based on how long a wetland is inundated with water, how frequently they flood, and the resulting vegetation. Wetlands hold water for different lengths of time (inundation duration) ranging from permanent (year-round) to semi-permanent (dry up periodically) to seasonal (four to nine months) to ephemeral (less than 90 days). Some wetlands are connected to rivers or streams and flood frequently, whereas others are more isolated, located further toward river bluffs and only flood occasionally, if ever (inundation frequency).

The vegetation, or landcover, that occurs at the intersection of inundation duration and frequency will vary depending on

how well plants are adapted to tolerating wet conditions and may range from mudflats (little to no vegetation) to herbaceous plants (annual moist soil vegetation plants such as smartweed and wild millet) to robust emergent vegetation (cattails, bulrush, bur reed), to forest (mixed oaks and other trees). Different plants and animals are adapted to these different



conditions and, although animal species may occupy similar habitats, they typically exploit them differently in ways that reduce competition, such as ducks or shorebirds that feed at different water depths, or use them at different times of the year.

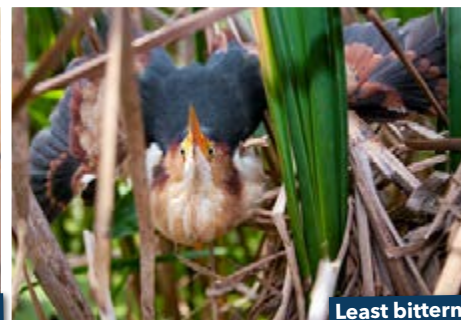
A Model Approach

To assess how well wetland conditions match up with wildlife needs, we decided to take a modelling approach. Since we could not develop models for each of nearly 400 wetland-dependent species, we instead chose surrogate species whose habitat needs represent the unique combination of conditions that occur in wetlands. We wanted a mix of species that use wetlands in different ways and at different times of the year, so we were sure to cover the full range of wetland types and animal needs. We chose paddlefish as a surrogate of riverine species that use permanent water but need wetlands as nursery locations, meaning their critical wetland need occurs in late spring through summer. Least bitterns represent breeding waterbirds that use semi-permanent wetlands that only dry up periodically and typically have robust emergent plants as the dominant vegetation and are critical for bitterns' successful nesting efforts. Small-mouthed salamanders depend on seasonal wetlands for breeding and larval development and are much less mobile than a bird or fish, so they require smaller wetland areas that include connectivity to forest where they spend about 10 months out of the year. Gray treefrogs represent wetlands located near river bluffs or embedded within upland forests that are less frequently flooded than a wetland located near rivers or streams. Mallards, soras, and pectoral sandpipers all represent migratory species but require different landcover categories, including herbaceous annual vegetation, robust emergent vegetation, and mudflats, respectively. Prothonotary warblers represent breeding interior forest species dependent on bottomland forest.

Once we selected our surrogate species, we wanted an approach that included a spatial element (where did suitable wetlands occur), a predictive element (what are the chances a species would use a wetland), and that quantified the degree of uncertainty associated with our predictions. The amount of uncertainty or unknowns is a major challenge when trying to



Paddlefish



Least bittern



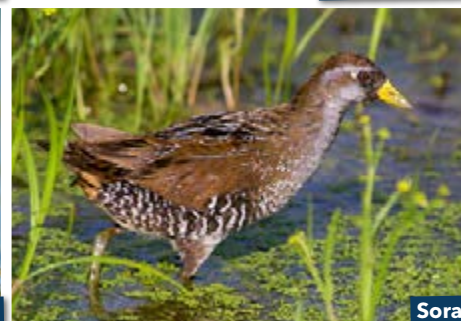
Small-mouthed salamander



Gray treefrog



Mallards



Sora



Pectoral sandpiper



Prothonotary warbler

model ecological systems because there are many factors for which we do not have control, such as weather and habitat features. For example, although we know least bitterns nest in wetlands with robust, emergent vegetation like cattails that have water throughout the nesting season, how does the relationship of vegetation to water contribute toward successful nesting? Is it a Goldilocks-type relationship in that there can be too much vegetation (100 percent canopy coverage), too little vegetation (100 percent open water), or the “just right” mix of vegetation to water (50 percent water to 50 percent vegetation)? And, if there is a “just right” mix, what is it and how do we measure it? And how do wetland management decisions influence the mix of vegetation to water and, potentially, nesting success?

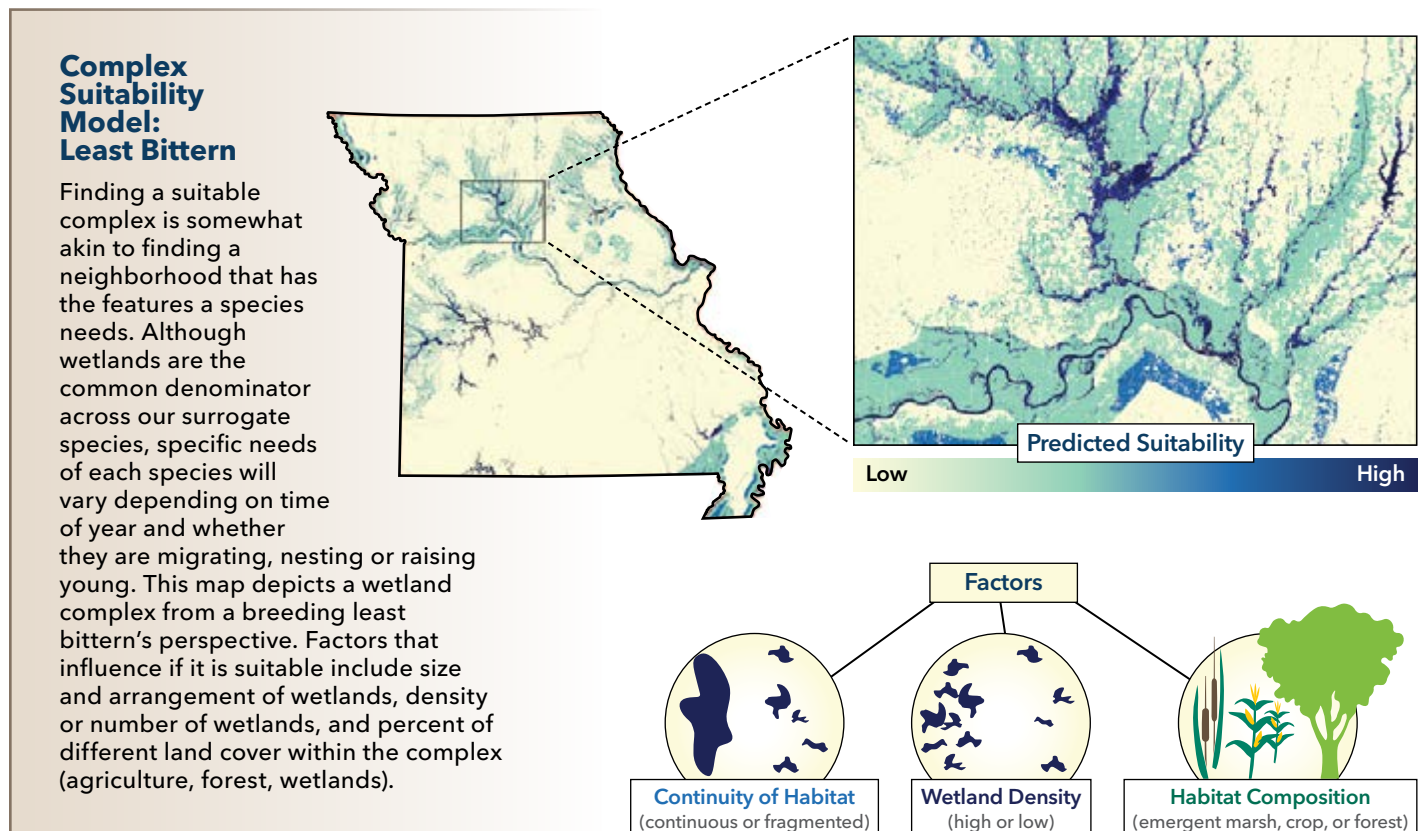
This is BBN

The modelling approach we selected is called a Bayesian Belief Network (BBN), where “belief” acknowledges that these models incorporate how we think the system being modelled works. BBNs are graphic models that can be used to explore the probability or chance that some outcome — which in our models is animal presence — will occur based on relationships between environmental or ecological factors that, together, form suitable habitat conditions for the animal. We built our models to incorporate time and space so we could accommodate variation among the different species’ life history needs. We broke the time component down by two-week intervals to account for the different times that critical needs occur for each species. We included a regional sub-model that calculates the probability that an animal will find or encounter a wetland complex and find it suitable; this is somewhat comparable to finding a neighborhood that suits its needs for a specific time of year. The second sub-model occurs at the individual wetland scale and calculates the probability an animal will find what it needs within a wetland whether it be nesting habitat for a breeding species or foraging habitat for a migrating species. The final output of the model is the probability that a site is occupied by the species.

We constructed models for each surrogate species based on information gleaned from an extensive review of almost 10,500 scientific articles and by incorporating the knowledge of 54 experts, including researchers and wetland managers

with extensive experience with at least one of our surrogate species. We also used geographic information layers to build a wetland spatial layer that helps inform species model attributes or characteristics (e.g. number of wetlands, landscape habitat composition, wetland area), especially at the complex scale, that contribute toward predicting if habitat conditions are suitable for each of the surrogate species.

By using the experiences and knowledge of species experts to fill in information gaps, we can calculate probability estimates that predict the chance an animal will find and use a wetland and quantify uncertainty of that estimate. Uncertainty is reduced when species experts agreed on some parts of the model; for instance, there is general agreement that in areas with a lot of wetlands, emergent marsh habitat (cattails), and large wetlands, we will find least bittern. But other scenarios may have less agreement among species experts, such as a complex that includes many wetlands, but the dominant wetland type is woody wetlands, and wetlands are smaller, which can result in greater uncertainty. In this instance, the chance of least bittern presence is likely much less, but we are not as sure of our estimate because there is a lack of information on whether or if least bittern use woody wetlands. Over time, as we validate our models and learn more based on actual data, we can update the models. This is especially powerful in a decision support framework in which we can learn from our management decisions.





Once a breeding least bittern finds a wetland complex, whether they stay depends on if they find foraging and nesting habitat. Foraging habitat includes robust vegetation like cattails interspersed with openings of water so they can grasp the plants and pluck their prey from the water. Nesting habitat is toward the interior of the cattails and provides protection from predators.

Aiding Future Planners

Some early outcomes from this project include maps that predict the habitat suitability at two spatial scales (landscape and local) while also producing estimates of model uncertainty. As species models are further developed, we will generate habitat suitability maps during different times of the year, thereby establishing a baseline framework to overlay the various layers of habitat suitability for local populations. Ultimately, this information can be used by wetland conservation planners to set local population objectives. Assessment information will also enable these local decisions to be integrated into statewide strategic goals and objectives, as well as larger planning efforts at regional and national scales. Once established, the models can continue to be refined, assisting in our ability to conserve wetlands in a manner that meets the basic needs of a range of wetland-dependent species. ▲

Doreen Mengel is a retired wetland/waterbird ecologist who most enjoys traipsing through Missouri's wetlands, absorbing the sights, sounds and smells intrinsic to these complex ecosystems. She lives on 9 acres in northern Boone County where she indulges her current hobby of trying to identify all critters that either live on or simply pass through her small patch of the world. Her most recent visitor was an armadillo which, quite honestly, was an unexpected sighting.

Get Outside

in MAY → Ways to connect with nature



Let There Be Light

It wouldn't be a late-spring Missouri evening without May beetles (June bugs) flying clumsily around porch lights, crash-landing on their backs, waving their legs helplessly. But these beetles may not be the only ones joining the party at the porch light. Many insects are attracted to lights at night. Click beetles and noctuid moths are just two examples of others you might find high-flying at night or crash-landed by morning.



You're My Blue-Eyed Bloom

Blue-eyed Mary, one of the few Missouri wildflowers that is truly blue, is in bloom. This beauty is just one of many wildflowers dotting the landscape. May is a great time to get out and discover Missouri's wildflowers. For more information, visit short.mdc.mo.gov/Zri.



KANSAS CITY REGION

Special Event: Prairie Day

Saturday • May 14 • 8 a.m.-4 p.m.

Wah'Kon-Tah Prairie

3860 East 02 Road, El Dorado Springs, MO 64744

No registration required. Call 417-876-5226 for more information.

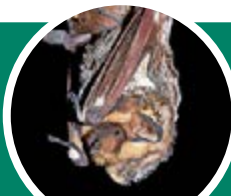
All ages

Early morning bird hike starts at 8 a.m. Prairie booths and exhibits open from 10 a.m. to 4 p.m. Activities include grazing tours/wagon rides, prairie walks/bee surveys, aquatic demo, atlatl throwing, archery, flintknapping, bird station, plants, pollinators, and insects, amphibians and reptiles, skulls, and furs. Presentation on bird conservation. Concessions by St. Clair County Cattlemen's Association from 11 a.m. to 1 p.m.



Natural Events to See This Month

Here's what's going on in the natural world.



SOUTHEAST REGION

Native Plants: FLOWERAMA

Saturday • May 7 • 1-3:30 p.m.

Cape Girardeau Conservation Nature Center

2289 County Park Drive, Cape Girardeau, MO 63701

No registration required; for more information, call 573-290-5218

All ages

The bees know it, the butterflies know it, but do you? Come see just how amazing Missouri is in bloom as we celebrate the colors, shapes, and scents of our native flowers. This event is perfect for all ages, with crafts for adults and kids, games, garden tours with our naturalists, and much more. You are welcome to dress in your flowery best and buzz on by for a bloomin' good time. For those participating in Cape Girardeau CNC's "A Year in Color," this program will earn green plants bead.

Go On a Fish Watch

Spring and early summer is a great time to observe the activities of fish because many species are spawning. During spawning, they are often concentrated in shallow water, show bright spawning colors, and exhibit territorial defense, nest construction, courtship, and parental care. Tips for viewing: approach cautiously, try using binoculars, avoid creating vibrations that can be transferred to water, maintain a low profile so you're not silhouetted against the sky, use polarized sunglasses to reduce solar reflections, try it on quiet days when there's no wind to break up the water surface. For help identifying Missouri fish while you're out, visit short.mdc.mo.gov/4Jm.



Green sunfish



Hybrid striped bass



Orangethroat darter spawning concludes.



Scarlet cups appear. Do not eat.

3 Things YOU Can Do to Help Pollinators



1

Plant Natives

Native plants are a food source for bees, butterflies, and other pollinators. Add plants like common milkweed, showy goldenrod, and prairie blazing star to your landscape.

2

Keep it Blooming

Keep something in bloom each season. Some species bloom all year, others only in April and May, still others in July and August. Learn more at mdc.mo.gov/monarch.

3

Get Involved

Protect native grasslands, provide nesting places, and become a wildlife gardener. To learn how, visit GrowNative.org.

Places to Go

SOUTHWEST REGION

Twenty-Five Mile Prairie Conservation Area

A tale of two prairies

by Larry Archer

✕ **It is the best of prairies; it is the worst of prairies** — or at least not yet as good as the best of prairies. Twenty-five Mile Prairie Conservation Area (CA) is a 334-acre remnant prairie consisting of two sections of distinctly different quality.

The northern section of Twenty-Five Mile Prairie CA — 120 acres — is a designated state natural area, representing some of Missouri's best remaining remnant prairie, said Regional Resource Management District Supervisor Kyle Hedges.

Resting on limestone bedrock, rather than the sandstone beneath most of the region's other prairies, has allowed the soil on Twenty-Five Mile Prairie CA soils to nurture more than 190 species of plants, Hedges said.

"We have some plants that tend to dominate there that we don't see as abundant elsewhere, like rattlesnake master and wild quinine," he said. "I see those on other prairies, but not like there."

Although also remnant prairie with limestone bedrock, the lower two-thirds of the area has not fared as well and is undergoing restoration, he said.

"Chronic overgrazing prior to MDC ownership on the southern end has degraded it. We've used seed from the north end to help reseed some of the south end, some of the more abused sites, so you can't get any more local than that."



Great spangled fritillary

"Typically, there's some amount of mowed fire lines to navigate, so you're not in waist high vegetation. There's almost always a burn unit on that northern third to wander around and scout around. That would be fairly shorter regrowth. It would be a lot showier of course."

—Twenty-Five Mile Prairie CA District Supervisor
Kyle Hedges

DAVID STONNER



TWENTY-FIVE MILE PRAIRIE CONSERVATION AREA

consists of 334 acres in Polk County. From
Humansville, take Business Highway 123 south
0.5 mile, then Gravel Road E330 east 2 miles.

37.7828, -93.5289

short.mdc.mo.gov/44M

417-895-6880

WHAT TO DO WHEN YOU VISIT



Birdwatching The eBird list of birds
recorded at Twenty-Five Mile Prairie CA is
available at short.mdc.mo.gov/44Q.



Hunting **Deer** and **turkey**
Regulations are subject to annual changes.
Refer to MDC's regulation page online at
short.mdc.mo.gov/Zjw for regulations.

Also **quail**, **rabbit**

DISCOVER MO OUTDOORS

Users can quickly and easily find
outdoor activities close to home, work,
or even while traveling with our free
mobile app, MO Outdoors. Available
in Android or iPhone platforms at
mdc.mo.gov/mooutdoors.



WHAT TO LOOK FOR WHEN YOU VISIT



Prairie kingsnake



Dickcissel



Rattlesnake master



Henslow's sparrow



Celestial Lily

Nemastylis geminiflora

Status

Not common

Size

Height: about 12 inches

Distribution

Scattered in the unglaciated plains, eastern portions of the Ozarks, and the Ozark border



Did You Know?

This plant is not technically a lily — it is in the iris family. How can you tell the difference? In irises, the flower's ovary is positioned below where the petals and sepals seem to attach, and not above them. Also, irises have three stamens.

A perennial herb with grasslike leaves growing from a bulb, celestials bloom from April to May. The flowers appear as sky blue or blue-violet six-pointed stars that measure 2½ inches across. Each flower blooms for only one day, in the morning, and then closes in the afternoon. Celestial lilies occur in glades, prairies, and rocky slopes on calcareous substrates.



HUMAN CONNECTIONS

We often think only in terms of a plant's economic, medicinal, and biological value, but we should also consider the aesthetics and immeasurable good beautiful plants like celestial lilies bring to the landscape.



ECOSYSTEM CONNECTIONS

Bees, flies, and other insects gather nectar from the flowers, pollinating them in the process. Although celestial lilies only bloom for about a month, their bulbs persist yearlong beneath the soil and help prevent erosion.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖



FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:

- ▶ Catch-and-Release:
March 1–May 27, 2022
- ▶ Catch-and-Keep:
May 28, 2022–Feb. 28, 2023

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2022

Nongame Fish Giggling

Impounded Waters, sunrise to sunset:
Feb. 16–Sept. 14, 2022

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2022–Feb. 15, 2023

Paddlefish

Statewide:
March 15–April 30, 2022

On the Mississippi River:
March 15–May 15, 2022
Sept. 15–Dec. 15, 2022

Trout Parks

State trout parks are open seven days a week
March 1 through Oct. 31.

Catch-and-Keep:
March 1–Oct. 31, 2022

Buy Permits and Permit Card

Buy Missouri hunting and fishing permits from numerous vendors around the state, online at mdc.mo.gov/buypermits, or through our free mobile apps, MO Hunting and MO Fishing.



Permit cards are an additional way to show proof of most permits. Buy a new permit card for a one-time fee of \$2 at mdc.mo.gov/buypermits. Buyers can select from four images: bass, buck, bluebird, or mallard duck.



HUNTING

Black Bear*

Oct. 17–26, 2022

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2022

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2022–March 3, 2023

Deer

Archery:
Sept. 15–Nov. 11, 2022
Nov. 23, 2022–Jan. 15, 2023

Firearms:

- ▶ Early Youth Portion (ages 6–15):
Oct. 29–30, 2022
- ▶ November Portion:
Nov. 12–22, 2022
- ▶ Late Youth Portion (ages 6–15):
Nov. 25–27, 2022
- ▶ Antlerless Portion (open areas only):
Dec. 3–11, 2022
- ▶ Alternative Methods Portion:
Dec. 24, 2022–Jan. 3, 2023

Elk*

Archery:
Oct. 15–23, 2022

Firearms:
Dec. 10–18, 2022

Groundhog (woodchuck)

May 9–Dec. 15, 2022

Pheasant

Youth (ages 6–15):
Oct. 29–30, 2022

Regular:

Nov. 1, 2022–Jan. 15, 2023

Quail

Youth (ages 6–15):
Oct. 29–30, 2022

Regular:

Nov. 1, 2022–Jan. 15, 2023

Rabbit

Oct. 1, 2022–Feb. 15, 2023

Squirrel

May 28, 2022–Feb. 15, 2023

Turkey

Archery:
Sept. 15–Nov. 11, 2022
Nov. 23, 2022–Jan. 15, 2023

Firearms:

- ▶ Spring: April 18–May 8, 2022
- ▶ Fall: Oct. 1–31, 2022

Waterfowl

See the Migratory Bird and Waterfowl
Hunting Digest or visit short.mdc.mo.gov/ZZf
for more information.

**Only hunters selected through a random drawing may participate in these hunting seasons.*

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.



**Follow us
on Instagram**

@moconservation

You might say this broad-headed skink knows where it's at — spending its days exploring Missouri's wooded areas. May is a great time to visit a wooded area, with wildflowers in bloom, mushrooms popping, and birds chirping. Get out there! You never know what you might discover.

📷 by **David Stonner**